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LIEFERUNG 216 of Engler and Prantl's *Die natürlichen Pflanzenfamilien* is devoted to the conclusion of the treatment of the Orthotrichaceae, to a presentation of the Splachnaceae with 61 species, and of the Funariaceae except the last genus, Funaria. The mosses are now the only group incomplete in this monumental work.— C. R. B.

PROFESSOR ENGLER[10] has published a third edition of his very useful outline of the classification of plants. It will be remembered that this includes the characterization of all families and their important subdivisions; with special mention of useful plants, since the book is intended for the use of pharmaceutical students.— J. M. C.

NOTES FOR STUDENTS.

W. A. WHEELER[11] has published a list of the grasses of Minnesota, based mainly on his redeterminations of the material in the herbarium of the University of Minnesota. The list includes 178 species and varieties, 24 species not having been previously reported from the state.—J. M. C.

NĚMEC[12] reports that the action of benzol and 1 per cent. $CuSO_4$ on the roots of Pisum and Vicia causes many cells to contain two or more nuclei. A few hours later these nuclei are found to have reunited; this fusion of nuclei is obviously not in the least homologous with sexual fusion. The roots eventually die.—E. B. COPELAND.

MELVILLE T. COOK,[13] in investigating *Agrostemma Githago,* finds that the ovulate archesporium consists of one to three cells "of which all but one are absorbed," that a short beak projects through the micropyle, that two or three rows of cells "degenerate" to form a passage for the pollen-tube, that the proembryo is filamentous, later differentiating into a filamentous suspensor with vesicular basal cell and a large spherical embryo.—J. M. C.

CYRIL CROSSLAND[14] has suggested the way in which mangrove seedlings succeed in finding a lodgment on the coast of British and German East Africa, the whole of which is composed of a hard coral limestone. The peculiar seedlings float out to sea in regular fleets, the bud projecting from the water. Upon reaching shore the root-tip is inserted into any softness or crevice of the bottom by the falling tide, and the ripples causing the seedling to oscillate about the tip, it slowly bores down into any mud or crevice.—J. M. C.

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[10] ENGLER, A., Syllabus der Pflanzenfamilien. Edition 3. Berlin: Gebrüder Borntraeger. 1903. *M* 4.

[11] WHEELER, W. A., Catalog of Minnesota grasses. Minn. Bot. Studies **3**: 83–107. 1903.

[12] NĚMEC, B., Ueber ungeschlechtliche Kernschmelzungen. Sitzber. Böhm. Gesells. Wiss. 1902. Repaged reprint, 6 pp.

[13] COOK, MELVILLE THURSTON, The development of the embryo-sac and embryo of *Agrostemma Githago.* Ohio Naturalist **3**: 365–369, *pls.* 7–7*a*. 1903.

[14] CROSSLAND, CYRIL, Note on the dispersal of mangrove seedlings. Ann. Botany **17**: 267–270. 1903.

W. C. WORSDELL,[15] using the theory that sporophylls preceded in time all other kinds of leaves, and that the latter have been gradually differentiated from the former by sterilization, has attempted to trace the origin of the flower from such a strobilus as that of the cycads. He calls attention to the fact that in this strobilus the lowest sporophylls are sterile, and claims that these are the progenitors of the floral leaves of angiosperms. He traces the line into the Ranunculaceae, through such forms as Myosurus, and presents a diagram illustrating the origin of calyx and corolla in the family.—J. M. C.

VERY FEW of the Rhodophyceae multiply vegetatively by brood organ or reproductive fragments such as are found in several other groups of thallophytes and among the bryophytes. Okamura,[16] however, reports a clear case in *Chondria crassicaulis* from Japan. Small knob-like branches are formed in the summer, which become richly stored with starch, and ripen in winter, when they are easily detached from the parent plant. Filamentous hold-fasts are developed at the proximal end which doubtless attach the structure when it drifts to a suitable resting place. This habit recalls that of certain Characeae whose nodal regions, stored with starch, may survive an unfavorable season and later produce new growths.—B. M. DAVIS.

MARLOTH[17] has secured some interesting results from a study of Roridula, one of the Droseraceae of South Africa, and the only shrubby member of the family. Roridula with its sticky "tentacles" catches insects to supplement its food-supply, but a spider robs the plant of a share of its prey, being able to walk or run over the leaves without the slightest hindrance from the sticky secretion of the tentacles. At the same time, a small hemipterous insect (capsid) feeds upon the juices of the plant, having likewise acquired immunity from the dangers of the glandular hairs; but the plant utilizes it, by certain attractions in the flower and specially developed mechanical contrivances, to effect cross-pollination.—J. M. C.

A CONTRIBUTION to proteid assimilation in molds is made by W. Butkewitsch,[18] working in the Leipzig laboratory. Aspergillus, Penicillium, and three species of Mucor were grown in solutions of Witt's peptone and of fibrin, and the effect upon the medium was carefully studied. In cultures of Aspergillus most of the modified proteid takes the form of ammonia, while in those of the other molds very little ammonia is produced, decomposition stopping with the amido-acids, especially tyrosin and leucin. The trypsin-like enzyme which produces the last-named bodies is found not only in the cells, but also diffuses out into the medium. Aspergillus possesses the power to break down amido-acids into ammonia, hence the difference between it and the other forms studied.— B. E. LIVINGSTON.

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[15] WORSDELL, W. C., The origin of the perianth of flowers, with special reference to the Ranunculaceae. New Phytol. **2**:42–48. *pl. 3*. 1903.

[16] Okamura, K., On the vegetative reproduction of *Chondria crassicaulis* Harv. Bot. Mag. Tokyo **17**: 1–5. 1903.

[17] MARLOTH, R., Some recent observations on the biology of Roridula. Ann. Botany **17**: 151–157. 1903.

[18] BUTKEWITSCH, W., Umwandlung der Eiwessstoffe durch die niederen Pilze im Zusammenhange mit Bedingungen ihrer Entwickelung. Jahrb. Wiss. Bot. **38**: 147–240. 1902.

P. and H. SYDOW[19] have commenced a monographic study of the Uredinales which is expected to take three or four years for completion. The work is to appear in fascicles and the first volume is to be devoted to the genus Puccinia. The species of Puccinia are not arranged under their subgenera, Eupuccinia, Heteropuccinia, Brachypuccinia, etc., but according to the families of their phanerogamic hosts. The account has then the effect of a host index elaborated to include descriptions of the parasites. The reason given for this unusual procedure is the impossibility of assigning numerous imperfectly known species to the proper subgenus. One would think, however, that the authors had assumed equally great difficulties because of the confusion which must finally result as specific limits and nomenclature are shifted both among the hosts and parasites. It will be a very useful book, however, if it can be revised at suitable intervals.— B. M. DAVIS.

SOME INTERESTING OBSERVATIONS on the structure and development of young plants of Oedogonium have been recorded by Fritsch.[20] The large disklike holdfast, so characteristic of many species, is by no means universal. There are forms with a rhizoidal base and small point of attachment. Floating plants have a large saclike end which is frequently found in connection with an air bubble, apparently formed by the plant itself. The cap formed at the first cell division of the germinating zoospore is not generally thrown off, although some species have this characteristic habit. The brown deposit, frequently found at the base of young plants, consists of "ferric oxid or of some salt thereof." The colorless condition of Oedogonium filaments probably indicates gradual death of the plant and is not a resting condition, as described by Keller (Proc. Acad. Nat. Sci. Phila. 1901). The paper concludes with an account of abnormal zoospore formation, and some exceptional forms of sporelings.— B. M. DAVIS.

ITEMS OF TAXONOMIC INTEREST are as follows: F. HEYDRICH (Flora **92**: 97–101. *figs. 4.* 1903) has published a new genus (*Rudicularia*) of Valoniaceae from Japan.—H. and P. SYDOW (Ann. Mycologici **1**: 35–36. 1903) have established a new Mexican genus (*Asteroconium*) of Melanconiaceae found on leaves of Litsea.—P. A. DANGEARD (*idem* 61–64) has published a new genus (*Rhabdium*) of Chytridiaceae.—N. L. BRITTON (Torreya **3**: 23. 1903) has described a new species of Eleocharis (*E. Smallii*) from Pennsylvania.—F. E. CLEMENTS (Bull. Torr. Bot. Club **30**: 83–94. 1903) in describing new Ascomycetes from Colorado has published *Tichosporium*, *Psilothecium*, *Ophiogloea*, *Scytopezis*, and *Heteroplegma* as new genera.—C. H. PECK (*idem* 95–101) has published a new fungous genus (*Mitruliopsis*) related to Mitrula.—A. HOLLICK (*idem* 102–105) has described a new Magnolia and a new Ficus from the Cretaceous of Kansas.—W. W. ROWLEE (*idem* 106–108) has described a new pine (*P. recurvata*) from the Isle of Pines.—W. A. MURRILL (*idem* 109–120) in his second paper on the Polyporaceae of North America presents Pyropolyporus, recognizing 18 species, 10 of which are new.—C. S. SARGENT (*Rhodora* **5**: 52–66. 1903) has published 13 new species of Crataegus recently recognized in eastern Canada and New England.—B. L. ROBINSON (*Rhodora* **5**: 85–89. 1903) has shown that *Echinodorus parvulus* is not to be regarded as an Alisma.—M. L. FERNALD (*idem* 90–92) has described a new Bidens (*B. Eatoni*) from Massachusetts.—P. HENNINGS (Hedwigia Beibl. **42**: 22–24. *figs. 5.* 1903) has described a new genus (*Ruhlandiella*) of Rhizinaceae from Germany.—J. M. C.

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[19] SYDOW, P. and H., Monographia Uredinearum. Vol. I. fasc. 1 and 2. *pls. 23.* Leipzig: Gebrüder Borntraeger. 1902. Each *M* 12.

[20] FRITSCH, F. E., The structure and development of the young plants in Oedogonium. Annals of Botany **16**: 467–486. *figs. 3.* 1902.

RECENT TERATOLOGICAL LITERATURE.— In the American Florist **19**: 866, 1902, are two excellent figures of torsion in the stem of carnations.—DRUERY (Gard. Chron. **32**: 226–228. *figs. 77–78.* 1902) records a cristate variety of *Pteris aquilina* growing spontaneously, and illustrates it by two photographs. —FLOYD (Rhodora **4**: 244–245. 1902) notes the discovery of a cristate form of *Nephrodium marginale*, and since the variation seems to be permanent proposes *N. marginale* forma *Davenportii*. The fixation of cristation in ferns is well known.— BOWER (Ann. Botany **17**: 278–280. 1903) figures and describes an abnormal specimen of *Lycopodium rigidum* Gmel. in which a sporophyll of slightly greater width than the average subtends two sporangia of slightly unequal size, and calls attention to the rarity of such variations in the Lycopodiaceae.— RAYMONDAND (Rev. Sci. du Limouscin **10**: 370–373. *pl. 3.* 1902) describes and figures syncarpy in the bean (*Phaseolus vulgaris*), and discusses at considerable length the question of the terminology which should be employed in such cases. The paper might give the impression of greater value had the author mentioned at least two or three of about fifteen descriptions which have been published of syncarpy in this species.— BRITCHER (Bull. Maine Agric. Exp. Station no. 86. 1902) discusses variation in *Trillium grandiflorum* Salisb., giving many tables of measurements and six plates from photographs of normal and abnormal forms.— Under the title "Petiolate connation in *Trifolium pratense*" WHITE describes (Torreya **2**: 183–184. 1902) abnormal leaves of *T. pratense* consisting of five and six leaflets on unusually strong petioles, and concludes that the examples represent cases of connation rather than the production of supernumerary leaflets.— Fasciation in *Lilium Henryi* is figured and described by HENRY

Garden **62**: 284. 1902). From the ground the stalk is almost flat, reaching a width of eight and one half inches at the top, with a thickness of only a quarter of an inch. The total length of the inflorescence is twenty-one inches and the total height of the plant seven feet and five inches.—" L." (Meehan's Monthly **12**: 152. 1902) records a specimen of *Lilium superbum* with four rows of petals. Three of the stamens had been transformed and the other three had distorted anthers. The editor comments on the observation and refers to a case in the tiger lily.—TROTTIER (Bull. Soc. Bot. Italiana **1902**: 44–50. *fig.*), in addition to bringing together a number of examples of teratological phenomena which are to be attributed to parasitic influence, presents some miscellaneous observations, noting the occurrence of a hypertrophy or fasciation in the male catkin of *Alnus glutinosa* Gaertn., fasciation of the stem in *Chrysanthemum Leucanthemum* L., fasciation and some accompanying malformations in *Euphorbia Cyparissias* L., abnormal leaves in *Fagus silvatica* L., floral proliferation, stasimorphy, and fasciation in *Galega officinalis* L., fasciation in *Passiflora coerulea* L., torsion of the stem in *Ranunculus acer* L., and formation of foliar ascidia in *Ulmus campestris* L. —FOCKEU (Rev. Gén. Bot. **14**: 517–521. *figs. 61–63.* 1902) describes floral monstrosities in *Digitalis purpurea* L. The abnormal flowers occupy the terminal portion of the inflorescence and are divided by him into three classes according to complexity of structure. The malformation, he concludes, is due to the growing together of two or more flowers. Abnormalities in the flowers of this species are especially well known and it seems hardly probable that the paper contains any forms which have not been noted in the very numerous papers, about twenty-five in number, which have touched on this point. It is unfortunate that some of the literature was not available to Fockeu.—CUSHMAN has recently published a paper (Amer. Nat. **36**: 865–885. *pls. 1–5.* 1902) in which he discusses and figures some of the abnormal forms of leaves in the adult plants and compares them with the seedlings of the following species: *Viola pedata* L., *Chelidonium majus* L., *Ranunculus acris* L., *Spiraea salicifolia* L., *Tanacetum vulgare* L., *Viola tricolor* L., and *Rosa rubiginosa* L. He assumes that these "localized stages" represent the form of ancestral types, and that with a knowledge of seedlings and ancestral forms, these "localized stages" may be used to great advantage in determining the phylogeny and relationships of the plant. As to whether deviations from the normal structure of the kind described in the present paper belong to teratology or not depends, very evidently, upon the way in which this very differently defined term is limited.—A paper of a type which is rare in these days, since it is an extensive paper on the abnormalities of plants, and of a type which is rare in the literature of teratology, in that it is a monographic treatment of a definitely limited field, is that of STENZEL (Bibliotheca Botanica **55**: 1–136. *pls. 1–6.* 1902). In an introduction of twenty-eight quarto pages, the first section is devoted to a consideration of the value of the deviations from the normal structure. In this section he reviews the widely differing opinions which have been held since the time of Goethe, and illustrates the present and past valuation of teratological observations as data for morphological conclusions by a review of the work which has been done in the Abietineae. Here he admits freely the importance of embryogeny in the solution of questions in morphology, but also calls attention to some of the conclusions which have been reached by the recognized leaders in embryology, and suggests that it would be interesting to compare, both as to number and importance, the erroneous conclusions which have been drawn from embryological evidence with those which are to be attributed to the "Irrwege der Missbildungslogik." He expresses his own belief in the value of teratological evidence in the solution of morphological questions. Over one hundred pages are then devoted to the floral abnormalities, arranged according to the nature of the malformation, which have been observed in native orchids growing in the open. A discussion of the different types of abnormalities observed is not possible in this place, and of their value only the specialist can judge, but the mass of observations and references to literature will surely be of great value. The paper is illustrated by six lithographic plates.—J. ARTHUR HARRIS.